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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/556,544

11/14/2005

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EXAMINER

TORRES, JUAN A

ART UNIT

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/556,544	Applicant(s) KOSLOV ET AL.	
	Examiner JUAN A. TORRES	Art Unit 2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 November 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2 and 11-21 is/are rejected.
- 7) ☒ Claim(s) 3-10 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 November 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>11/14/2005 & 2/10/2006</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Information Disclosure Statement

The information disclosure statements (IDS) submitted on 11/14/2005 and 02/10/2006 are in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

Claim Objections

Claims 16 and 18-19 are objected to because of the following informalities:

Regarding claim 16, the recitation in lines 7 and 8 of claim 16 "if" seems to be improper because the use the word "if" render the claim indefiniteness (see 35 USC 112 2nd paragraph indefinite); it is clear what it happens if the condition is met, but if that condition is not met is indefinite. It is suggested to change the word "if" to "when".

Regarding claim 18, the recitation in lines 10 and 11 of claim 18 "if" seems to be improper because the use the word "if" render the claim indefiniteness (see 35 USC 112 2nd paragraph indefinite); it is clear what it happens if the condition is met, but if that condition is not met is indefinite. It is suggested to change the word "if" to "when".

Regarding claim 19, claim 19 is objected because depends directly from claim 18 and claim 18 is objected.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-2, 11 and 22-24 are rejected as failing to define the invention in the manner required by 35 U.S.C. 112, second paragraph.

Regarding claims 1-2, 13-14, and 20-21, in claims 1-2, 13-14, and 20-21 the structure which goes to make up the device must be clearly and positively specified. The structure must be organized and correlated in such a manner as to present a complete operative device.

Claims 1-2, 13-14, and 20-21 are apparatus claims, but they do not define any structure. MPEP in section 2114 states that “[A]pparatus claims cover what a device *is*, not what a device *does*.” *Hewlett-Packard Co. v. Bausch & Lomb Inc.*, 909 F.2d 1464, 1469, 15 USPQ2d 1525, 1528 (Fed. Cir. 1990) (emphasis in original)”. And also that “While features of an apparatus may be recited either structurally or functionally, claims directed to an apparatus must be distinguished from the prior art in terms of structure rather than function. In *re Schreiber*, 128 F.3d 1473, 1477-78, 44 USPQ2d 1429, 1431-32 (Fed. Cir. 1997)”.

Regarding claim 11, claim 11 recites the limitation "the combiner" in line 2. There is not clear which combiner is referring to, because claim 7 discloses in lines 9-14 two combiners “a combiner for combining the received signal with the reconstructed modulated upper layer signal such that an upper layer signal component of the received signal is substantially reduced therefrom to provide a received lower layer signal; a combiner for combining the demodulated upper layer signal and the reconstructed encoded upper layer signal such that an upper layer symbol component of the demodulated upper layer signal is substantially reduced to provide a first demodulated lower layer signal” (emphasis added).

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 15-19 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

Regarding claim 15, claim 15 claim a process that is not tied to another statutory class (such as a particular apparatus) or transform underlying subject matter (such as an article or materials) to a different state or thing, and a process to be eligible under 35 USC § 101, must (1) be tied to another statutory class (such as a particular apparatus) or (2) transform underlying subject matter (such as an article or materials) to a different state or thing (see MPEP 2106.IV.B and 2106.IV.C) (see *In re Comiskey* 2008).

Regarding claims 16-19, claims 16-19 are rejected because they depend directly or indirectly from claim 15 and claim 15 is rejected.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 2 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Arslan (US 20040022335 A1) in view of Applicant Admitted Prior Art (AAPA).

Regarding claim 1, Arslan discloses a receiver comprising a down converter for providing a received signal (figure 2 block 210 paragraph [0055]); and a demodulator having at least two demodulation modes for demodulating the received signal (figure 6 paragraph [0068]), Arslan doesn't disclose that one demodulation mode is hierarchical demodulation and another demodulation mode is layered demodulation. AAPA discloses one demodulation mode is hierarchical demodulation and another demodulation mode is layered demodulation (paragraphs [0002]-[0003] and figures 2-5 and 7-8). Arslan and AAPA teachings are analogous art because they are from the same field of endeavor of digital communications. At the time of the invention it would have been obvious to a person of ordinary skill in the art to integrate the demodulations disclosed by AAPA with the system disclosed by Arslan. The suggestion/motivation for doing so would have been to support backward compatibility with legacy systems (AAPA paragraphs [0002]-[0003]).

Regarding claim 2, Arslan and AAPA disclose claim 1, Arslan also discloses that the demodulator is responsive to a demodulation mode signal that specifies which one of the number of demodulation modes is performed by the demodulator (figure 6 paragraph [0068]).

Regarding claim 15, Arslan discloses receiving a signal (figure 2 block 210 paragraph [0055]); selecting one of a number of demodulation modes (figure 6 paragraph [0068]); and demodulating the received signal in accordance with the selected demodulation mode (figure 6 paragraph [0068]). Arslan doesn't disclose that at least two of the number of demodulation modes is a hierarchical demodulation mode

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and a layered demodulation mode. AAPA discloses one demodulation mode is hierarchical demodulation and another demodulation mode is layered demodulation (paragraphs [0002]-[0003] and figures 2-5 and 7-8). Arslan and AAPA teachings are analogous art because they are from the same field of endeavor of digital communications. At the time of the invention it would have been obvious to a person of ordinary skill in the art to integrate the demodulations disclosed by AAPA with the system disclosed by Arslan. The suggestion/motivation for doing so would have been to support backward compatibility with legacy systems (AAPA paragraphs [0002]-[0003]).

Claims 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Arslan and AAPA as applied to claim 1 above, and further in view of Chen (US 7173981 B1).

Regarding claim 12, Arslan and AAPA disclose claim 1, Arslan and AAPA don't specifically disclose that the demodulator provides at least a demodulated upper layer signal and a demodulated lower layer signal, the receiver further comprising an upper layer decoder for decoding the demodulated upper layer signal to provide a decoded upper layer signal; and a lower layer decoder for decoding the demodulated lower layer signal to provide a decoded lower layer signal (inherently AAPA is disclosing this because is the correspondent receiver of the disclosed transmitted in AAPA paragraphs [0002]-[0003]). Chen discloses that the demodulator provides at least a demodulated upper layer signal and a demodulated lower layer signal, the receiver further comprising: an upper layer decoder for decoding the demodulated upper layer signal to

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provide a decoded upper layer signal (figure 5 UL, column 5 lines 60-67); and a lower layer decoder for decoding the demodulated lower layer signal to provide a decoded lower layer signal (figure 5 LL, column 6 lines 22-47). Arslan, AAPA and Chen teachings are analogous art because they are from the same field of endeavor of digital communications. At the time of the invention it would have been obvious to a person of ordinary skill in the art to integrate the demodulations disclosed by Chen with the system disclosed by Arslan and AAPA. The suggestion/motivation for doing so would have been to decoded layered signals (Chen abstract).

Claims 13, 14, 20 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chen (US 7173981 B1) in view of Arslan (US 20040022335 A1) and further in view of Applicant Admitted Prior Art (AAPA).

Regarding claim 13, Chen discloses a television set for displaying video content (figure 4 column 4 line 55 to column 5 line 27); and a receiver coupled to the television set for receiving a signal conveying the video content (figure 4 column 4 line 55 to column 5 line 27). Chen doesn't specifically disclose a multi-mode receiver wherein the receiver includes at least a hierarchical demodulation mode and a layered demodulation mode. Arslan discloses a multimode receiver (figure 6 paragraph [0068]). Chen and Arslan teachings are analogous art because they are from the same field of endeavor of digital communications. At the time of the invention it would have been obvious to a person of ordinary skill in the art to integrate the demodulations disclosed by Arslan with the system disclosed by Chen. The suggestion/motivation for doing so would have been to support different modulations (Arslan paragraphs [0068]). AAPA discloses one

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demodulation mode is hierarchical demodulation and another demodulation mode is layered demodulation (paragraphs [0002]-[0003] and figures 2-5 and 7-8). Chen, Arslan and AAPA teachings are analogous art because they are from the same field of endeavor of digital communications. At the time of the invention it would have been obvious to a person of ordinary skill in the art to integrate the demodulations disclosed by AAPA with the system disclosed by Chen and Arslan. The suggestion/motivation for doing so would have been to support backward compatibility with legacy systems (AAPA paragraphs [0002]-[0003]).

Regarding claim 14, Chen, Arslan and AAPA disclose claim 13, Chen also discloses that the received signal is a satellite signal (figure 4 column 4 line 55 to column 5 line 27).

Regarding claim 20, Chen discloses a demodulator for processing a multi-level modulation based received signal comprising at least a first signal layer and a second signal layer (figure 5 column 5 line 29 to column 6 line 47). Chen doesn't disclose at least one register for use in controlling a demodulation mode of the demodulator wherein at least one demodulation mode is a hierarchical demodulation mode and another demodulation mode is a layered demodulation mode. Arslan discloses at least one register for use in controlling a demodulation mode of the demodulator (figure 6 paragraph [0068]). Chen and Arslan teachings are analogous art because they are from the same field of endeavor of digital communications. At the time of the invention it would have been obvious to a person of ordinary skill in the art to integrate the demodulations disclosed by Arslan with the system disclosed by Chen. The

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suggestion/motivation for doing so would have been to support different modulations (Arslan paragraphs [0068]). AAPA discloses at least one demodulation mode is a hierarchical demodulation mode and another demodulation mode is a layered demodulation mode (paragraphs [0002]-[0003] and figures 2-5 and 7-8). Chen, Arslan and AAPA teachings are analogous art because they are from the same field of endeavor of digital communications. At the time of the invention it would have been obvious to a person of ordinary skill in the art to integrate the demodulations disclosed by AAPA with the system disclosed by Chen and Arslan. The suggestion/motivation for doing so would have been to support backward compatibility with legacy systems (AAPA paragraphs [0002]-[0003]).

Regarding claim 21, Chen discloses a lead for receiving a multi-level modulation based received signal comprising at least a first signal layer and a second signal layer signal (figure 5 column 5 line 29 to column 6 line 47); and a demodulator for processing the multi-level modulation based received signal (figure 5 column 5 line 29 to column 6 line 47). Chen doesn't disclose a number of demodulation modes and wherein at least one demodulation mode is a hierarchical demodulation mode and another demodulation mode is a layered demodulation mode. Arslan discloses a number of demodulation modes (figure 6 paragraph [0068]). Chen and Arslan teachings are analogous art because they are from the same field of endeavor of digital communications. At the time of the invention it would have been obvious to a person of ordinary skill in the art to integrate the demodulations disclosed by Arslan with the system disclosed by Chen. The suggestion/motivation for doing so would have been to support different

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modulations (Arslan paragraphs [0068]). AAPA discloses at least one demodulation mode is a hierarchical demodulation mode and another demodulation mode is a layered demodulation mode (paragraphs [0002]-[0003] and figures 2-5 and 7-8). Chen, Arslan and AAPA teachings are analogous art because they are from the same field of endeavor of digital communications. At the time of the invention it would have been obvious to a person of ordinary skill in the art to integrate the demodulations disclosed by AAPA with the system disclosed by Chen and Arslan. The suggestion/motivation for doing so would have been to support backward compatibility with legacy systems (AAPA paragraphs [0002]-[0003]).

Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chen, Arslan and AAPA as applied to claim 15 above, and further in view of Namgoong (US 7376209 B2).

Regarding claim 17, Chen, Arslan and AAPA disclose claim 15, AAPA also discloses the use of turbo codes or LDPC codes in the lower layer signal encoder/decoder (figure 3 paragraph [0029], turbo coding and LDPC coding implicitly used LLR tables). Chen, Arslan and AAPA don't specifically disclose selecting a log-likelihood ratio (LLR) look-up table (LUT) as a function of the demodulation mode signal; and generating log-likelihood ratios from the LLR LUT. Namgoong discloses selecting a log-likelihood ratio (LLR) look-up table (LUT) as a function of the demodulation mode signal; and generating log-likelihood ratios from the LLR LUT as a function of the selected signal (abstract figure 2 column 3 line 62 to column 4 line 21, column 6 lines 25-44). Chen, Arslan, AAPA and Namgoong teachings are analogous art because they

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are from the same field of endeavor of digital communications. At the time of the invention it would have been obvious to a person of ordinary skill in the art to integrate the LLR LUT disclosed by Namgoong with the system disclosed by Chen, Arslan and AAPA. The suggestion/motivation for doing so would have been to improve the performance of the system reducing the number of computations (Namgoong abstract, see also Thesling III abstract).

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the “right to exclude” granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 15, 20 and 21 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 27 of copending Application No. 10/556538. Although the conflicting claims are not identical, they are not patentably distinct from each other because claims 15, 20 and 21 of the present application are anticipated by claim 27 of copending Application No. 10/556538.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Allowable Subject Matter

Claims 3-10 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

a) Ishio (US 4039961 A) discloses a demodulator for combined digital amplitude and phase keyed modulation signals

b) Onggosanusi (US 20050232174 A1) discloses a linear interference cancellation receiver for edge systems

c) Arslan (US 6574235 B1) discloses receiving co-channel signals by channel separation and successive cancellation and related receivers

d) Chen (US 20060056541 A1) discloses improving hierarchical 8psk performance

e) Chen (US 7245671 B1) discloses preprocessing signal layers in a layered modulation digital signal system to use legacy receivers

f) Chen (US 20050254600 A1) discloses interference cancellation in communication signal processing

g) Stewart (US 20050084040 A1) discloses modulation detection

h) Yang (US 6763074 B1) discloses adaptive configurable demodulation system with multiple operating modes

i) Thesling III (US 5657354 A) discloses planar approximating method for computing the log-likelihood ratio optimal signal metric of each component code decoder in 8-PSK block coded modulation systems

j) Yang (US 20050084043 A1) discloses adaptive multi-step combined DC offset compensation for edge 8-PSK

k) Khullar (US 6400928 B1) discloses blind detection of modulation

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JUAN A. TORRES whose telephone number is (571)272-3119. The examiner can normally be reached on 8-6 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mohammad Ghayour can be reached on 571-272-3021. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Juan Alberto Torres
9/17/2008

/Juan A Torres/
Examiner, Art Unit 2611